

Amendments to the Specification

On page 2, line 30, please replace the paragraph with the following:

AI
In operation, the state machine may provide a way to track the movement of an object. For example, the object starts in a resting position, at state 00. As it the object moves, the square waves of the outputs A and B change as the decoder wheel spins. The state machine movement may be from state 00 to state 10 to state 11, for example. If this state machine is for the X axis, the output for the X axis would be a 1 for the state change from 00 to 10 and another 1 for the state change 10 to 11. Typically, the current processes use the last state and the present state to determine direction of the object movement.

On page 3, lines 5-24, please replace the paragraphs with the following:

To determine object movement and direction, these results are typically summed up and sent to the host computer. For example, assume that samples are taken every 200 microseconds, and an output is transmitted to the host computer every 10 milliseconds. In this example, 50 samples are taken during each period between transmissions. If the positive direction for the X axis state machine is to the right, and the positive direction for the Y axis state machine is up, a resulting output may be X +4, and Y +2. There may have been some object direction reversals in between the two transmissions, but in general, the net object movement was in a positive direction for both X and Y.

AB
Each sample taken may or may not produce a new state. If the mouse is at rest between transmissions, there will be no state changes, and therefore there will be no outputs to sum. As the states change, for example, from 00 to 01 to 11, each would result in a 1, and the sum for that axis would be a net change of +2. In this manner, the state machine allows the controller or processor in the moving object to communicate movement to a host computer.

However, in the current state of the art a problem with regard to the sample rate occurs as the movement speed of the object increases. If the change from 00 to 10 to 11 accelerates, less time is spent in each state. The time spent in each state may become so short that the state is not sampled. This would result in the last state being 00 and the present state being 11. Since a state was skipped, the current implementations of state machines cannot tell if the object moved and caused the state machine to changed states by going in one state machine direction, resulting in the sequence 00, 10, 11, or in the state machine opposite direction, resulting in the sequence 00, 01, 11. Without last state data that is from a state sequential with the present state, the object movement and direction data is inaccurate or lost."